FINANCING UNIVERSITIES IN NORTH AMERICA

CAN ONTARIO COMPETE IN THE 1990s?

COUNCIL OF ONTARIO UNIVERSITIES

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TABLE OF CONTENTS

	Page
List of Figures and Tables	ii
Executive Summary	v
INTRODUCTION	1
METHODOLOGY	2
American and Canadian Financial Information	2
Currency Adjustments	3
Structural Differences	4
COMPARISONS OF REVENUE	5
Specific University Comparisons	7
COMPARISONS OF EXPENDITURES	8
CONCLUSIONS	10
Figures and Tables	13
Appendix: Data Sources	29

FIGURES AND TABLES

Figures		Page
1	Revenue per Full-Time Enrolment Public Doctoral Level Universities, 1987-88	13
2	Revenue per Full-Time Enrolment Private Doctoral Level Universities, 1987-88	14
3	Revenue per Full-Time Enrolment Public & Private Doctoral Level Universities, 1987-88	15
4	Expenditure per Full-Time Enrolment Public Doctoral Level Universities, 1987-88	16
5	Expenditure per Full-Time Enrolment Private Doctoral Level Universities, 1987-88	17
6	Expenditure per Full-Time Enrolment Public & Private Doctoral Level Universities, 1987-88	18
7	Expenditure per Full-Time Enrolment by Function, 1987-88	19

Tables		Page
1	E & G Revenues per Full-Time Enrolment, Research Doctoral Level Universities, 1987-88	21
2	Index of E & G Revenues per Full-Time Enrolment, Research Doctoral Level Universities, 1987-88	22
3	Educational and General Revenue per Full-Time Headcount, 1987-88 (Toronto)	23
4	Educational and General Revenue per Full-Time Headcount, 1987-88 (Queen's)	24
5	E & G Expenditures per Full-Time Enrolment, Research Doctoral Level Universities, 1987-88	25
6	Index of E & G Expenditures per Full-Time Enrolment, Research Doctoral Level Universities, 1987-88	26
7	Variance Between U.S. and Ontario Universities, E & G Expenditures per Full-Time Enrolment, Research Doctoral Level Universities, 1987-88	27

EXECUTIVE SUMMARY

This study focuses on the competitiveness of Ontario's university system in the North American context. Using the latest available data, for 1987-88, it compares (in Canadian dollars) the funding of the ten Ontario universities which have significant doctoral programme offerings with that of comparable institutions in eleven of the most populous states in the United States, which together contain more than half of the U.S. population. The states chosen were the industrial states of the Great Lakes region, along with the three most populous states outside this region (California, Texas, and Florida).

While much of the analysis deals with public institutions in the U.S., data on private U.S. universities were also included, since these institutions contribute significantly to the output of the "system" of higher education.

The following are highlights of the results.

- Public universities in the eleven U.S. states received 33% ($4,400) more revenue per full-time student than the comparable ones in Ontario. When the revenues of private institutions are added, the difference widens to 49% ($6,500).

- The major source of revenue for public institutions in both jurisdictions is state/provincial appropriations. For the U.S., they averaged 19% ($1,500) higher than in Ontario.

- The second major source of revenue for public institutions is tuition fee revenue. This was 76% ($1,600) higher in the U.S. than in Ontario.

- At the individual state level, some remarkable differences in revenue per full-time student emerge. For public and private institutions combined, only Ohio and Texas have levels of funding that approximate Ontario levels. Michigan sits 57% above Ontario, Pennsylvania 74% and California 115%.

The study also matched individual U.S. institutions of similar size and programme mix to two Ontario universities. In order to gain a large enough sample, the analysis went beyond the original eleven states.

- The University of Toronto was compared with seven of the largest public universities in the United States. Only one, Ohio State, had funding as low as Toronto. The other six were considerably better off and some like UCLA and the University of Michigan, were about 70% better funded than Toronto. As a group, the seven universities had total funding 40% greater than Toronto.

- Queen's University was compared with fifteen public and private universities across the United States. Only one, the University of New Hampshire, had funding as low as Queen's, and at the other extreme, one private university (Stanford) had revenues five times as great. Average revenues for the nine public universities were 40% greater than for Queen's, and the six private universities averaged 179% more than Queen's.

The differences between U.S. and Ontario universities widened between 1985-86, when this matter was first studied by the Council of Ontario Universities, and 1987-88. Variances in per-student revenues increased by slightly over $800 or 23% for public institutions and by $1,400 or 27% when public and private institutions were taken together.

10 December 1990

FINANCING UNIVERSITIES IN NORTH AMERICA: CAN ONTARIO COMPETE IN THE 1990S?

INTRODUCTION

Keeping Canada internationally competitive is a major goal of both levels of government in Canada as well as the private sector. The free trade agreement with the United States, the continuing strength of Japanese enterprise, the increasing economic cohesiveness of western Europe, together with the Bank of Canada's policies of high interest rates and a strengthened Canadian currency, have all increased pressures on the Canadian economy. Sustaining economic growth over the long-term and preventing an overall decline in levels of employment will be major challenges facing the Canada in the coming decade.

Perhaps more than any other region of the country, Ontario must confront this challenge. As the industrial heartland of the country, the Ontario economy has the ability to affect, in a major way, the level of economic activity in the rest of the country. As the wealthiest province in Canada, the continued viability of the Ontario economy is crucial to the well-being of the country as a whole.

An advanced economy like Ontario's requires a highly skilled labour force and a significant, ongoing commitment to research and development. Both depend on the level of development and quality of post-secondary education in this province. In October, 1988 the Council of Ontario Universities released the results of a major study it had undertaken into the financing of universities in North America.[1] This study focused its attention on research-oriented universities offering doctoral degrees across a broad range of academic disciplines in Ontario and in 11 of the most populous states in the United States.[2] The states chosen

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[1] Council of Ontario Universities, Financing Universities in North America: Can Ontario Compete? October 1988.

[2] These research-oriented universities were selected according to a classification system devised by the Carnegie Foundation in the United States. The Carnegie Commission Classification Code categories Research Universities I and II and Doctorate-Granting Universities I and II include all of the American universities utilized in this study. The same criteria, for including institutions in the United States in one or other of these categories, were applied to Ontario universities.

for comparison included Ontario's most important neighbours, the industrial states of the Great Lakes region, and the three most populous states outside this region - California, Texas and Florida. More than half of the population of the United States live in one or other of those 11 states.

That study utilized financial data for 1984-85 and 1985-86, what was then the most current financial information available from the United States. The purpose of this current study is to apply and extend the methodology developed earlier to the most recent U.S. financial information available, that for the 1987-88 fiscal year.

METHODOLOGY

Making interjurisdictional comparisons which are reliable and valid requires data which are comparable. This can involve applying a single data collection instrument to more than one jurisdiction. Alternately, it can involve working with existing sources of data and making whatever adjustments are necessary to make interjurisdictional comparisons meaningful.

This second alternative has been selected in making comparisons between universities in Ontario and the United States. It has the advantage of permitting access to large-scale sources of information which are available in both Canada and the United States. Because the data are collected annually, these sources are relatively accurate and consistent.

American and Canadian Financial Information

In the United States, two major sources of information have been accessed. Financial information concerning American universities is collected annually by the U.S. Department of Education through its Integrated Postsecondary Education Data System (IPEDS). It is consistent with information previously collected by the Higher Education General Information Survey (HEGIS). This financial information is matched up institutionally with enrolment data collected by the Annual Survey of Colleges conducted by the College Entrance Examination

Board.[3] Only full-time student data for each university are used because the information on part-time students is not sufficiently consistent from jurisdiction to jurisdiction to permit comparison.

In Ontario, revenue and expenditure information for 43 universities and affiliated colleges is collected annually by the Council of Finance Officers - Universities of Ontario.[4] It is matched up with enrolment data collected by the University Affairs Report (UAR), a product of the Ontario Ministry of Colleges and Universities. Further details on these data are summarized in an Appendix to this report.

Currency Adjustments

Making valid comparisons between Ontario and the United States also requires some adjustment for the different values of the American and Canadian currencies. One common method of establishing a common monetary denominator is to use actual currency exchange rates. Exchange rates indicate the market value of one currency relative to another at a particular point in time. For example, in 1987-88 the Canadian dollar had an average value of 76.91 cents U.S.

Unfortunately, currency exchange rates are not a particularly reliable means of comparing financial data from two or more countries over time. Exchange rates vary from day to day in response to conditions in the international money markets and may bear only an indirect relationship to changes in price levels in the countries concerned. Distortions will arise over time if currency exchange rates are utilized. Even at any one particular point, the rate of exchange will be only an approximate measure of differences in prices from one country to another.

A somewhat more sophisticated means of establishing a common monetary denominator is the use of purchasing power parities. PPPs have been developed

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[3] United States Department of Education information and the College Board Annual Survey of Colleges information are available from the National Data Service for Higher Education in Boulder, Colorado.

[4] Council of Ontario Universities, Financial Report of Ontario Universities, various years.

by the Organisation for Economic Co-operation and Development for 24 countries, including both Canada and the United States. PPPs are "the units of each currency required to purchase the same quantity of goods and services within each respective country.... PPPs are the terms of exchange that equalise national price levels."[5]

Making use of purchasing power parities to compare revenues and expenditures of universities in Ontario and the United States implies the derivation of a common monetary denominator. "The basic principle of the PPP approach is to derive for any pair of countries the ratio of the actual or imputed prices for each item as expressed in their respective national currencies. Each ratio shows the rate at which a given amount of one currency should be converted into the other in order to purchase the same quantity of a particular item in both countries."[6] For example, the OECD calculates that in 1987 it took, on average, $1.23 Canadian to purchase as much in Canada as $1.00 U.S. would purchase in the United States. In 1988 this rose to $1.25 Canadian.[7]

All of the financial information included in this document is reported in terms of its equivalent value in Canadian dollars. American financial information is converted into Canadian dollar equivalents using the PPP approach. That is, the American data for the 1987-88 fiscal year are multiplied by 1.23 to produce an equivalent amount in Canadian currency.

Structural Differences

Finally, a major problem in making interjurisdictional comparisons arises from the structural differences in the organization of higher education. Some of these organizational differences are eliminated in this study by dealing only with research-oriented universities offering doctoral degrees. This eliminates from

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[5] Organisation for Economic Co-operation and Development, Purchasing Power Parities and Real Expenditures in the OECD, page 36.

[6] Ibid., page 37.

[7] Organisation for Economic Co-operation and Development, National Accounts, Main Aggregates, Volume 1, 1960-1988, page 151.

both countries community colleges, liberal arts colleges, and highly specialized professionally oriented schools.

However, one major structural difference which is not so easily eliminated is the average length of time a student spends in university. A student in Ontario might spend 13 years in elementary and secondary school and three years in university for a pass B.A. A similar student in the United States would spend 12 years in elementary and secondary school and four years in university (two years in "lower division" and two years in "upper division"). In effect, the American student will spend an additional year in university "lower division" while the Ontario student will spend the equivalent year in high school.

In financial terms, this will spread the costs of running an American university over more students and, because the marginal cost of these additional lower division students will be relatively low, the overall average cost per student will be artificially reduced. This will tend to make Ontario universities appear relatively more expensive than would otherwise be the case.

COMPARISONS OF REVENUE

Figures 1, 2, and 3 and Tables 1 and 2 compare educational and general revenues per full-time student at research, doctoral level universities in Ontario and the United States. Six major sources of revenue are used for 1987-88. The following conclusions can be drawn:

- Tuition fee revenue per full-time student at public universities in the United States was 76% ($1,578) greater than in Ontario universities.

- At private universities in the United States, tuition fee revenue per full-time student was $11,391 greater than in Ontario universities.

- State appropriations were a relatively insignificant source of revenue at most private universities. But at public universities in the United States, they averaged 19% ($1,467) more per full-time student than in Ontario.

- Federal government grants and contracts per full-time student to public universities in the United States were 110% ($1,515) greater than federal grants and contracts to Ontario universities. Federal grants and contracts to private universities in the United States were five times as great, on a per-student basis, as were federal grants and contracts to Ontario universities.

- State government grants and contracts with both public and private universities, on average, were slightly less per student than provincial government contracts with Ontario universities. However, this difference was largely due to Ontario Ministry of Agriculture and Food arrangements with the University of Guelph.

- Private gifts and contracts with individuals and corporations to public universities in the United States were 21% ($246) greater per full-time student than in Ontario. Private gifts and contracts to private universities were 183% ($2,089) greater than in Ontario.

- Endowment income received by public universities in the United States was significantly lower per full-time student ($334) than in Ontario, but private universities in the United States more than made up the difference. Their endowment income per student was 4 1/2 times that received by Ontario universities.

In total, these six sources of revenue afforded public doctoral universities in the eleven states 33% ($4,382) more revenue per full-time student than in Ontario in 1987-88. When the revenues of public and private institutions are combined, this difference grows to 49% ($6,518). The differences between U.S. and Ontario universities widened between 1985-86 and 1987-88. Variances in per-student revenues increased by slightly over $800 or 23% for public institutions and by $1,400 or 27% when public and private institutions were taken together.[8]

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[8] The 1985-86 values were derived by using Purchasing Power Parity to convert the results of our previous study.

Is it fair to compare public and private institutions in the U.S. with public institutions in Canada? Clearly, when one looks at an indicator like tuition revenue per full-time student, a comparison between public and private institutions must be very limited in purpose. Private institutions do, however, contribute significantly to the output of the "system" of higher education in the United States. In that respect, they are an essential element of the competitiveness of American higher education. In looking, therefore, at the relativeness competitiveness of these two "systems", the totality of the resources available to higher education in the U.S. can be compared to the totality of the resources available to universities in Ontario.

At the individual state level, some remarkable differences in revenue per full-time student emerge. For public and private institutions combined, only Ohio and Texas enjoy levels of funding which approximate Ontario levels. Michigan sits 57% above Ontario, Pennsylvania 74% and California 115%.

Specific University Comparisons

To highlight the differences between universities in Ontario and the United States, two universities in Ontario were selected for specific comparison with similar institutions in the United States. The University of Toronto and Queen's University were matched with similar universities - not only in size but also in programme offerings - and levels of revenue from the various sources were examined. Seven institutions comparable to the University of Toronto were identified but some had to be selected from outside of the eleven states used in this study in order to obtain a sufficiently large sample of comparators. All are public universities; there are no private institutions in the U.S. of a size and programme mix comparable to the University of Toronto. Only one of those seven institutions (Ohio State) had total funding levels as low as Toronto. The other six were significantly better off and some, like UCLA and the University of Michigan, were about 70% better off than Toronto. The seven universities, as a group, had total revenue per student which was about 40% greater than Toronto. The greatest differences were for federal grants and contracts (where the American institutions averaged three times the revenue of Toronto), tuition fees, and provincial or state appropriations.

Table 4 compares Queen's University with 15 public and private universities from across the United States. Only one of those (the University of New Hampshire) had a total funding level per full-time student which was as low as at Queen's and, at the other extreme, one private university had revenues which were more than five times as great. The 9 public universities, on average, had revenues which were 40% greater than at Queen's and the six private universities averaged 179% more than Queen's University. At the public universities, the differences were greatest for tuition fees - where the American schools received 88% more per student - and federal grants and contracts. At the private universities, as would be expected, tuition fees averaged 8 1/2 times as much as at Queen's. As well, endowment income was six times as much, federal grants and contracts averaged seven times as much, and private gifts and contracts averaged four times as much per student.

COMPARISONS OF EXPENDITURES

These major disparities between the revenues received by American and Ontario universities are reflected in the expenditure patterns of institutions in the two jurisdictions. The following conclusions can be drawn for 1987-88 from Figures 4, 5, and 6, and from Tables 5 and 6:

- Instructional expenditure consumes the highest proportion of total expenditure in both the U.S. and Ontario. However, the proportionate levels in the two jurisdictions are quite different (43% in the U.S. vs. 53% in Ontario). In absolute terms instructional expenditure per full time student was only 7% ($525) higher at American public universities than in similar institutions in Ontario. The comparable figure for public and private universities combined was 20% ($1,368).

- Research expenses, which represent about 20% of total expenditure at institutions in both jurisdictions, were 45% ($1,170) more per student at American public doctoral universities than at similar institutions in

Ontario. The comparable figure for public and private universities combined was 65% ($1,680).

- Academic and administrative support were funded at about double the rate in the United States as in Ontario. These functions consume about 20% of expenditure in U.S. institutions vs. 15% in Ontario.

- It is in the student services area that relative differences between U.S. and Ontario universities were greatest. Expenditure per full-time student in American public universities was 228% ($564) higher than in Ontario. The comparable figure for public and private universities combined was 261% ($644).

- Physical plant expenditures were 23% ($283) higher in public institutions in the United States than in Ontario. The physical environment is recognized as is an important element in the quality of academic life for both staff and students. Private institutions seem quite sensitive to this (and to the need to preserve their physical assets) and spend 50% more that the public institutions in the U.S. do and almost 85% more than universities in Ontario.

In total, American universities spent almost half as much again per full-time student in 1987-88 as Ontario universities.

The magnitude of some of these differences seems less attributable to salary and wage costs than to non-salary costs. Table 7 displays the actual variances in expenditure, by function, between U.S. and Ontario universities, as well as the variances for salaries and wages alone. It also examines the share of the total variance attributable to salaries and wages and compares this to the share which salaries and wages constitute of total expenditure.

Although salary costs constitute about 60% of total expenditure at public and private institutions in the U.S., only about 40% of the variance in per student cost between the U.S. and Ontario is salary-related. Thus, salary and wage costs contribute significantly less to observed variances than might be expected from

their share of total expenditure. This differs considerably by function, however. For example, in the instructional area, 9% of the $1,368 variance in expenditure between the U.S. and Ontario is attributable to salary costs. This compares to the 70% of total instructional costs which are attributable to salaries. It follows, therefore, that much of the observed difference in the level of expenditure per student between the U.S. and Ontario is non-salary related.

Figures 7 displays the differences between U.S. and Ontario universities in terms of how they distribute funds among the various expenditure functions. The difference in these patterns of expenditure is probably a reflection of the particular strategy adopted in Ontario universities of dealing with financial constraint over the past ten to fifteen years.

CONCLUSIONS

In 1988, the Council of Ontario Universities demonstrated that overall funding levels in Ontario universities were significantly below funding levels enjoyed by similar institutions in the United States. This report updates and extends that research. The financial resources available to universities in this province are barely equal to 75% of the level of resources afforded public universities in the United States and less than half of those derived by private universities. On a combined basis, the U.S. is providing its public and private universities about 50% more than is the case in Ontario. In particular, American universities exceed Ontario universities in the amount of funding received in the form of tuition fees, federal government grants and contracts, and - in the case of public universities - state government appropriations.

The financial malaise of universities in Ontario has been twenty years in the making. The massive growth of the whole education enterprise during the 1960s produced a maturing of the Canadian university system. Undergraduate enrolment increased dramatically while graduate and professional programs expanded enough to make it unnecessary for students to leave the country to complete their education. Government funding increased at a rate that was adequate to keep up with this expansion.

Since then, successive governments have been reducing their financial commitment to universities with Ontario among the leaders in Canada in cutting its support for higher education. Throughout the 1970s, the provincial government reduced its financial support for universities so that, even though it was one of the wealthiest provinces in Canada, by 1980 Ontario had the lowest level of operating grants per student in the country.[9] It has maintained that unenviable position throughout the past decade.

Universities are generally viewed as critical instruments in the development of the highly educated manpower essential to success in today's globally competitive economy. As well, the vigourous pursuit of research across a broad range of disciplines positions Ontario to share generally in the benefits of the advancement of knowledge. Indeed, in the absence of a corporate culture in Canada which fosters research and development, universities in Ontario play a critical role in ensuring that Canada stays at the leading edge of intellectual developments worldwide. But most important of all, universities in Ontario contribute significantly to the cultural and intellectual development of the province and afford Ontario's young and not so young an opportunity to develop their inherent talents to their full potential. Our society and the individuals who make it up deserve a better deal.

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[9] Tripartite Committee on Interprovincial Comparisons, Interprovincial Comparisons of University Financing, August 1989, page 5.

Figure 1

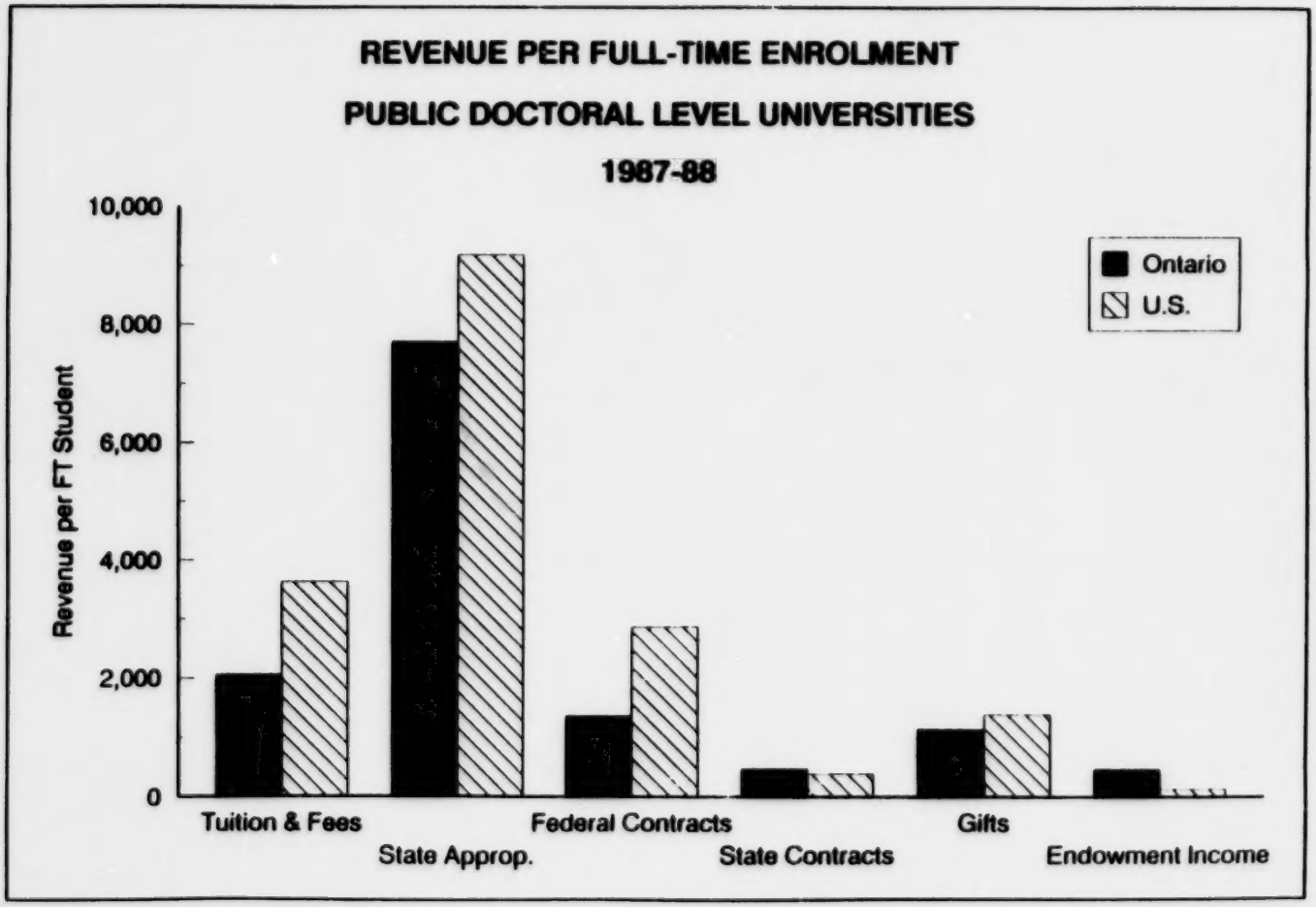
REVENUE PER FULL-TIME ENROLMENT
PUBLIC DOCTORAL LEVEL UNIVERSITIES
1987-88
Revenue per FT Student
10,000
8,000
6,000
4,000
2,000
0
Ontario
U.S.
Tuition & Fees
State Approp.
Federal Contracts
State Contracts
Gifts
Endowment Income

Figure 2

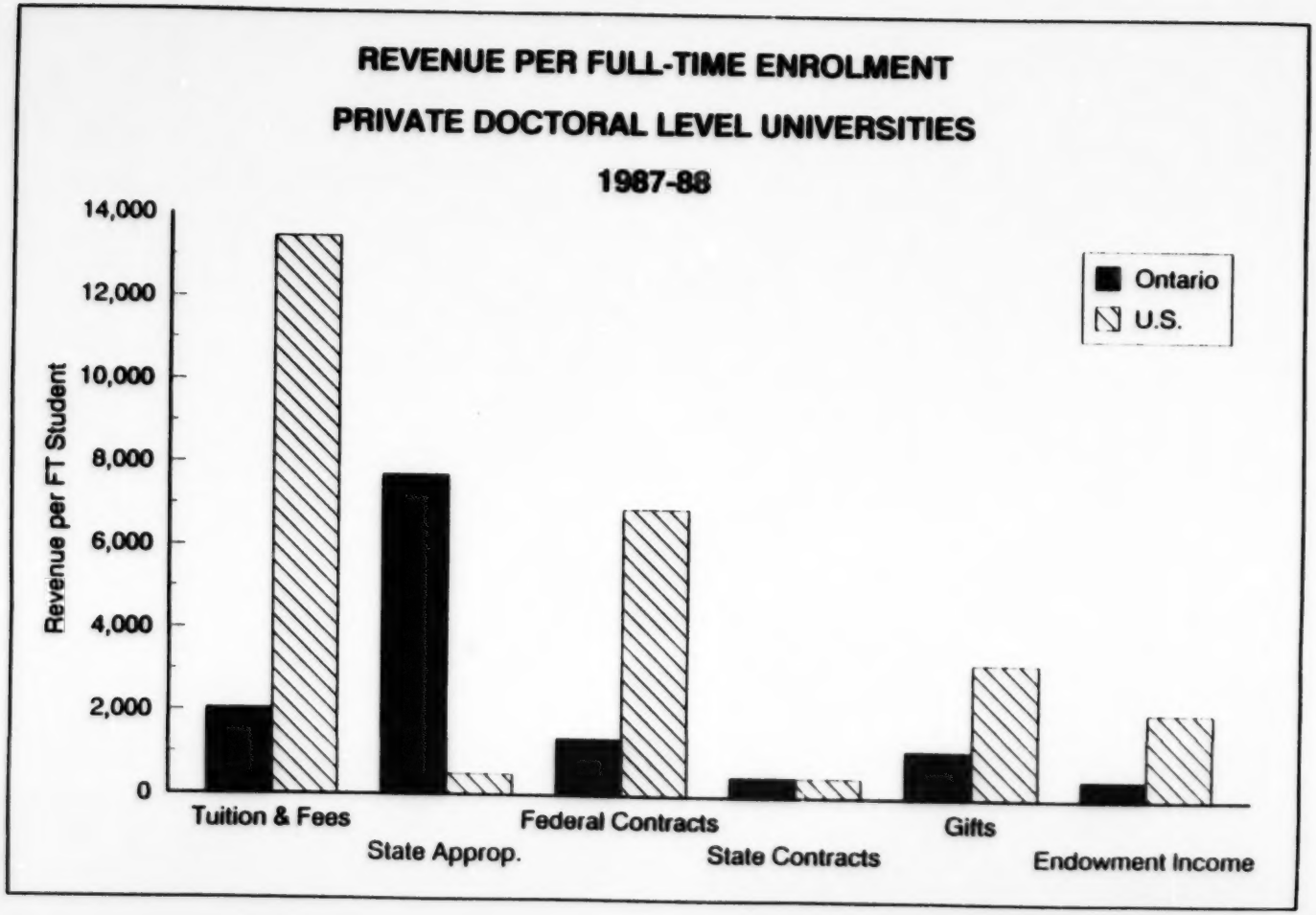
REVENUE PER FULL-TIME ENROLMENT
PRIVATE DOCTORAL LEVEL UNIVERSITIES
1987-88
Revenue per FT Student
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Ontario
U.S.
Tuition & Fees
State Approp.
Federal Contracts
State Contracts
Gifts
Endowment Income

Figure 3

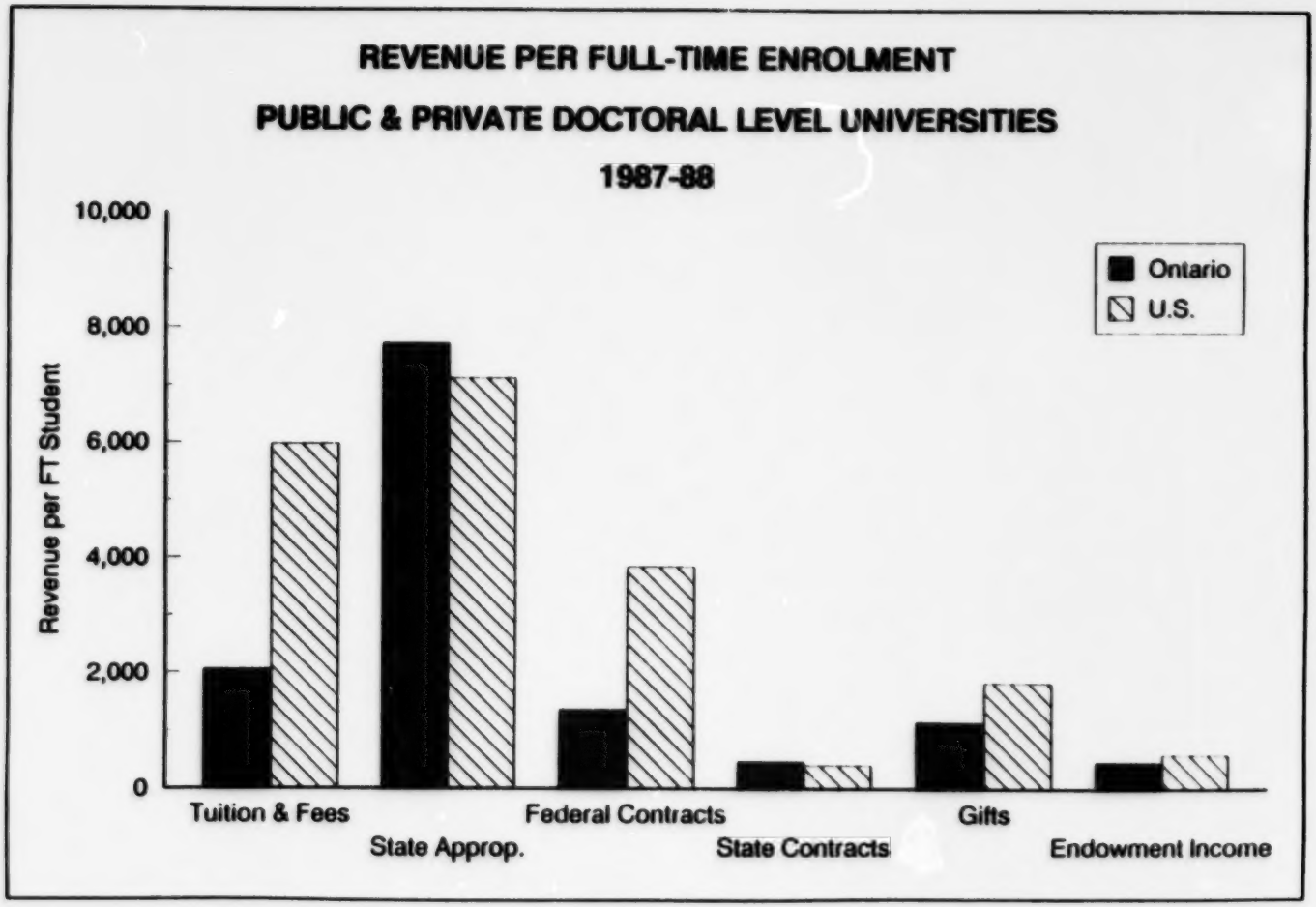
REVENUE PER FULL-TIME ENROLMENT
PUBLIC & PRIVATE DOCTORAL LEVEL UNIVERSITIES
1987-88
Revenue per FT Student
10,000
8,000
6,000
4,000
2,000
0
Ontario
U.S.
Tuition & Fees
State Approp.
Federal Contracts
State Contracts
Gifts
Endowment Income

Figure 4

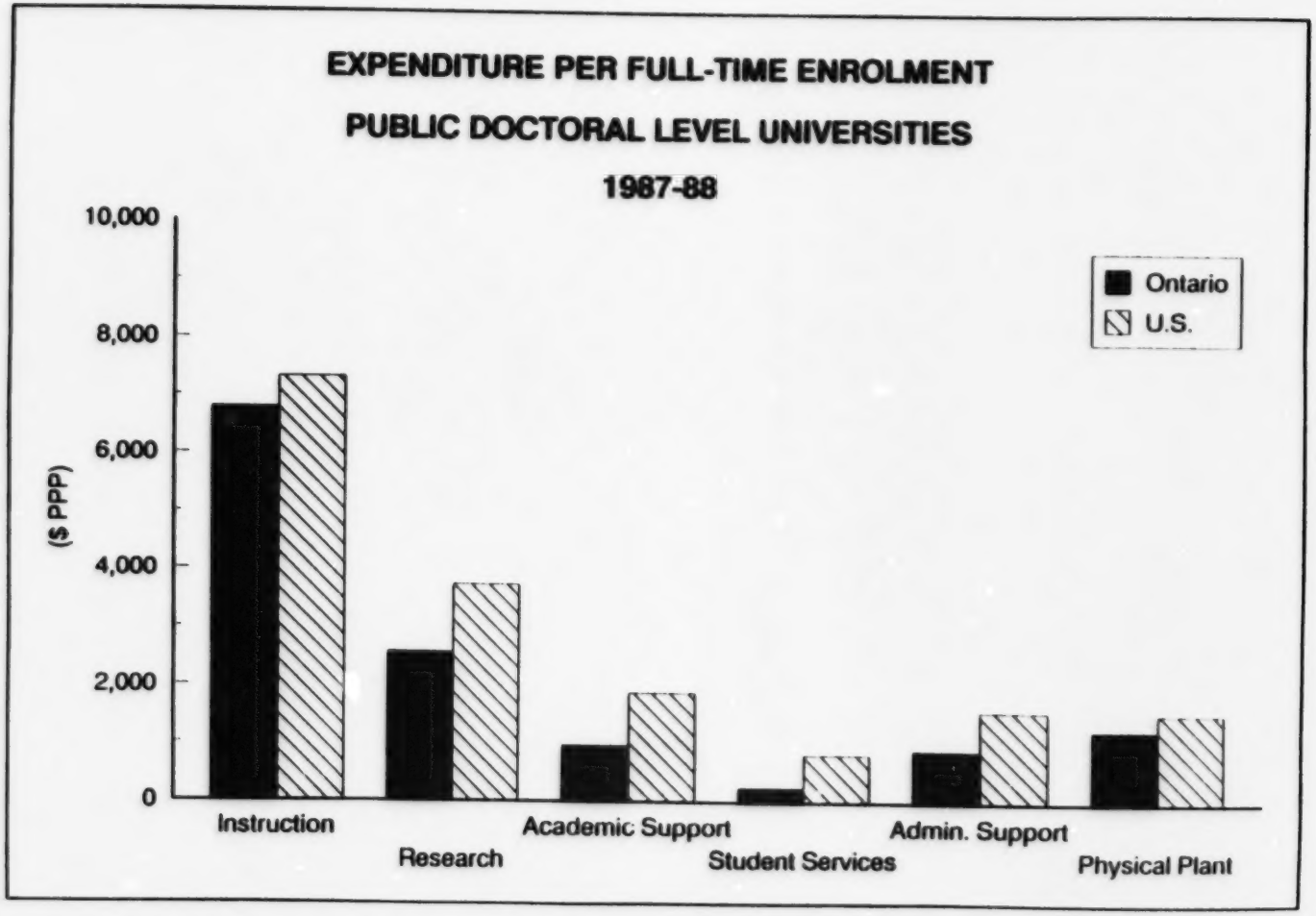
EXPENDITURE PER FULL-TIME ENROLMENT
PUBLIC DOCTORAL LEVEL UNIVERSITIES
1987-88
($ PPP)
10,000
8,000
6,000
4,000
2,000
0
Ontario
U.S.
Instruction
Research
Academic Support
Student Services
Admin. Support
Physical Plant

Figure 5

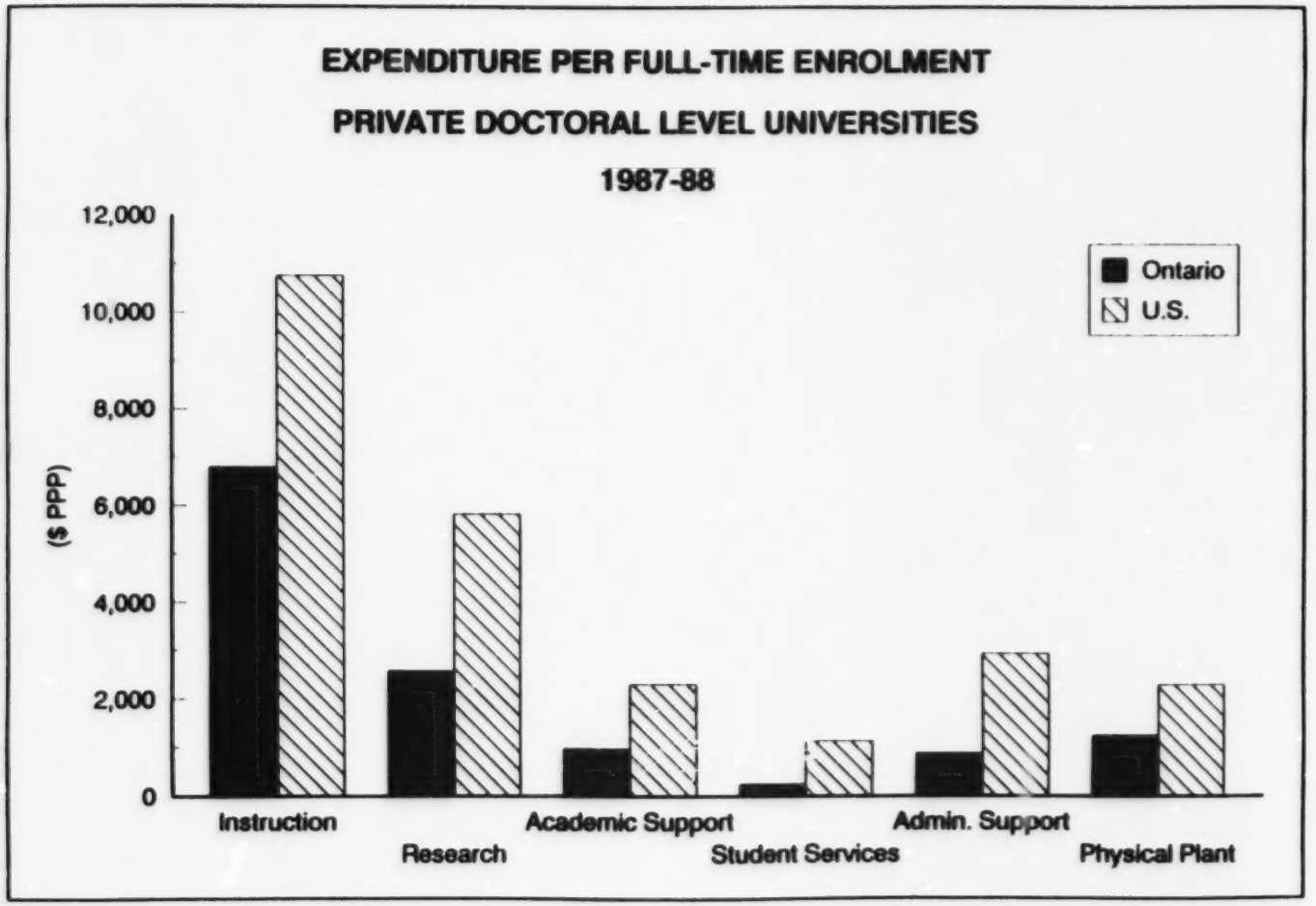
EXPENDITURE PER FULL-TIME ENROLMENT
PRIVATE DOCTORAL LEVEL UNIVERSITIES
1987-88
($ PPP)
12,000
10,000
8,000
6,000
4,000
2,000
0
Ontario
U.S.
Instruction
Research
Academic Support
Student Services
Admin. Support
Physical Plant

Figure 6

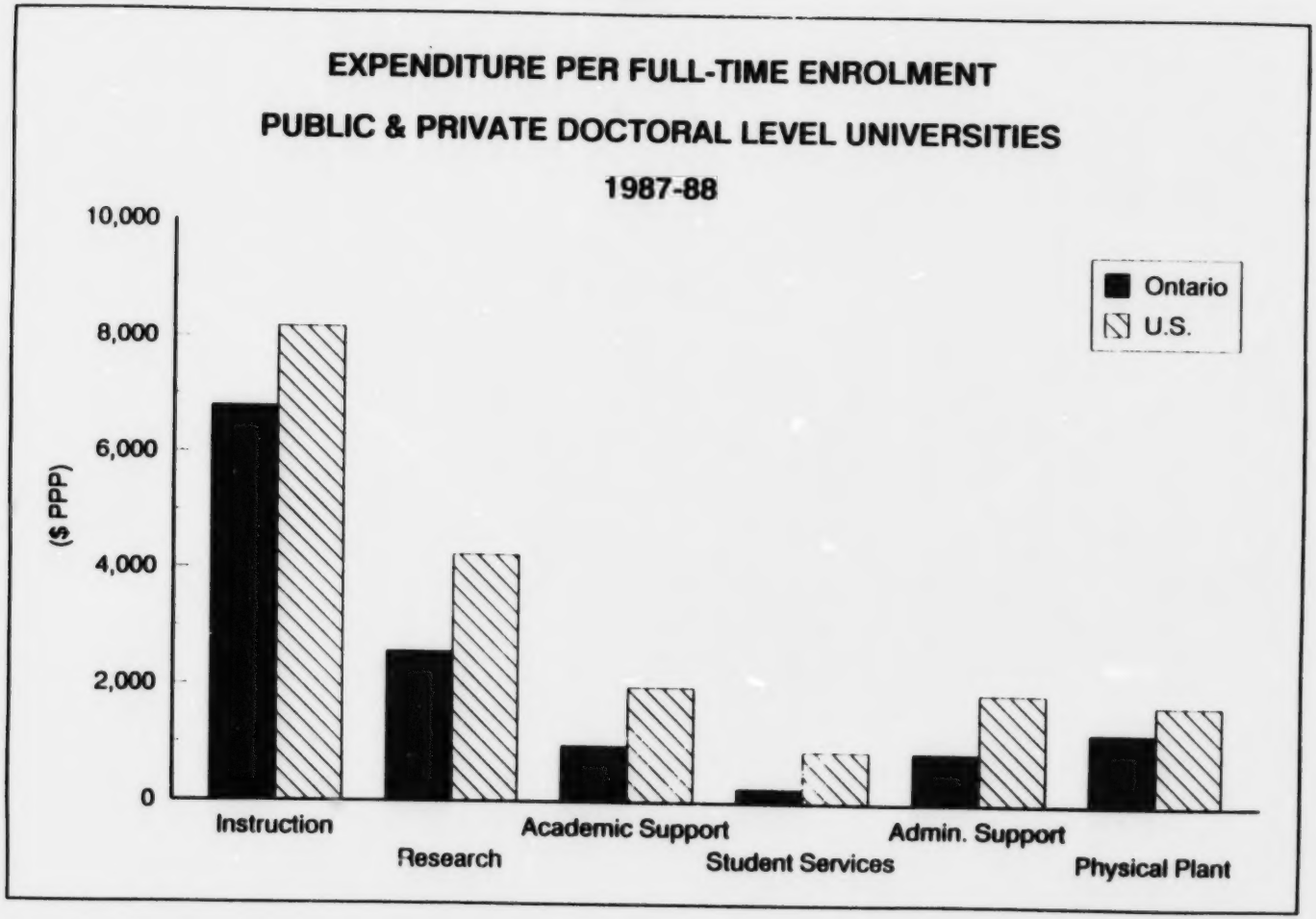
EXPENDITURE PER FULL-TIME ENROLMENT
PUBLIC & PRIVATE DOCTORAL LEVEL UNIVERSITIES
1987-88
10,000
8,000
6,000
4,000
2,000
0
($ PPP)
Ontario
U.S.
Instruction
Research
Academic Support
Student Services
Admin. Support
Physical Plant

Figure 7

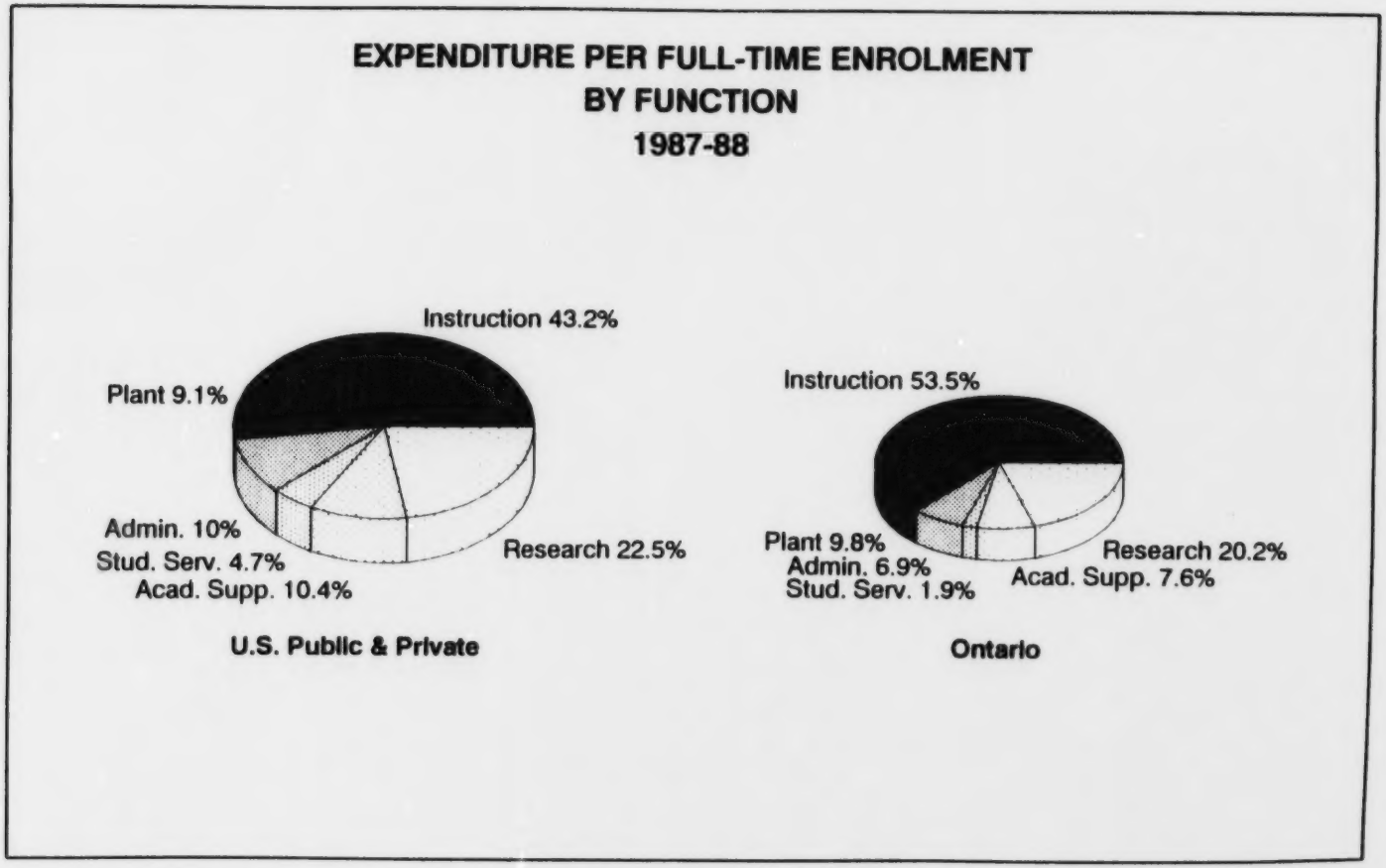
EXPENDITURE PER FULL-TIME ENROLMENT
BY FUNCTION
1987-88
Instruction 43.2%
Plant 9.1%
Admin. 10%
Stud. Serv. 4.7%
Acad. Supp. 10.4%
Research 22.5%
U.S. Public & Private
Instruction 53.5%
Plant 9.8%
Admin. 6.9%
Stud. Serv. 1.9%
Acad. Supp. 7.6%
Research 20.2%
Ontario

Table 1

E & G REVENUES PER FULL TIME ENROLMENT
RESEARCH DOCTORAL LEVEL UNIVERSITIES
1987-88 ($PPP)

	Tuition & Fees	State Appropriations	Federal Contracts	State Contracts	Gifts	Endowment Income	Total
Public							
California	2,975	14,023	5,177	436	1,715	0	24,326
Florida	2,148	12,345	2,540	1,019	1,309	0	19,361
Illinois	2,845	7,698	2,223	479	913	33	14,192
Indiana	4,087	6,515	1,966	129	1,018	100	13,815
Michigan	5,380	9,392	3,905	246	1,857	233	21,012
Minnesota	4,316	12,716	4,946	368	3,842	272	26,459
New York	2,429	13,923	1,937	656	1,309	0	20,254
Ohio	4,117	5,793	1,000	271	673	108	11,963
Pennsylvania	6,660	6,625	3,048	452	1,651	498	18,934
Texas	2,311	7,463	1,504	271	1,150	174	12,873
Wisconsin	3,720	8,608	4,448	59	1,648	160	18,642
Total Public	3,638	9,193	2,872	379	1,386	131	17,600
Private							
California	16,176	0	16,954	132	6,078	2,907	42,247
Florida	11,338	622	3,539	1,304	2,164	421	19,388
Illinois	16,342	170	7,142	485	4,030	3,040	31,208
Indiana	11,569	0	2,991	132	2,827	1,912	19,431
Michigan	8,737	0	257	578	3,828	103	13,503
New York	13,147	590	4,836	421	2,219	1,487	22,700
Ohio	12,594	1,491	11,797	138	11,659	883	38,562
Pennsylvania	15,297	1,274	7,835	607	3,876	1,580	30,469
Texas	6,390	0	1,103	229	1,525	5,043	14,290
Wisconsin	10,452	0	685	126	431	350	12,045
Total Private	13,451	487	6,917	457	3,229	2,069	26,610
U.S. Public & Private							
California	5,992	10,818	7,868	367	2,712	664	28,421
Florida	4,583	9,239	2,805	1,095	1,535	112	19,368
Illinois	5,899	5,995	3,336	480	1,618	713	18,041
Indiana	5,151	5,588	2,112	129	1,275	358	14,614
Michigan	5,464	9,158	3,814	254	1,906	230	20,825
Minnesota	4,316	12,716	4,946	368	3,842	272	26,459
New York	10,539	3,834	4,130	478	1,998	1,125	22,105
Ohio	4,521	5,588	1,508	300	897	273	13,088
Pennsylvania	9,741	4,716	4,756	507	2,444	884	23,049
Texas	2,857	6,465	1,450	265	1,200	826	13,063
Wisconsin	4,645	7,425	3,930	69	1,480	186	17,736
Total Public & Private	5,978	7,117	3,837	398	1,826	593	19,748
Ontario							
Carleton	1,958	5,640	911	108	371	141	9,129
Guelph	1,803	8,574	1,627	2,448	924	372	15,748
McMaster	1,792	8,150	2,107	978	3,277	830	17,134
Ottawa	1,933	9,048	1,388	517	1,278	238	14,402
Queen's	1,751	8,269	2,011	449	1,445	830	14,755
Toronto	2,329	9,042	1,838	305	1,517	1,069	16,100
Waterloo	1,786	6,907	1,369	333	952	220	11,567
Western	2,044	7,117	1,204	220	1,036	113	11,734
Windsor	2,162	6,681	476	119	99	123	9,660
York	2,407	6,562	450	96	285	104	9,904
Total Ontario	2,060	7,726	1,370	469	1,140	465	13,230

Table 2

INDEX OF E & G REVENUES PER FULL TIME ENROLMENT
RESEARCH DOCTORAL LEVEL UNIVERSITIES
1987-88 (ONTARIO = 100)

	Tuition & Fees	State Appropriations	Federal Contracts	State Contracts	Gifts	Endowment Income	Total
Public							
California	144.4	181.5	377.9	93.0	150.4	0.0	183.9
Florida	104.3	159.8	185.4	217.3	114.8	0.1	146.3
Illinois	138.1	99.6	162.3	102.1	80.1	7.1	107.3
Indiana	198.4	84.3	143.5	27.5	89.3	21.6	104.4
Michigan	261.2	121.6	285.0	52.4	162.9	50.1	158.8
Minnesota	209.5	164.6	361.1	78.5	337.0	58.4	200.0
New York	117.9	180.2	141.4	139.9	114.8	0.0	153.1
Ohio	199.9	75.0	73.0	57.8	59.0	23.3	90.4
Pennsylvania	323.3	85.8	222.5	96.3	144.8	107.1	143.1
Texas	112.2	96.6	109.8	57.7	100.8	37.5	97.3
Wisconsin	180.6	111.4	324.6	12.7	144.5	34.5	140.9
Total Public	176.6	119.0	209.6	80.9	121.6	28.1	133.0
Private							
California	785.3	0.0	1,237.5	28.2	533.2	625.1	319.3
Florida	550.4	8.1	258.3	278.1	189.8	90.6	146.5
Illinois	793.3	2.2	521.3	103.4	353.5	653.7	235.9
Indiana	561.6	0.0	218.3	28.2	248.0	411.1	146.9
Michigan	424.1	0.0	18.8	123.3	335.8	22.1	102.1
New York	638.2	7.6	353.0	89.8	194.7	319.8	171.6
Ohio	611.4	19.3	861.1	29.5	1,022.7	189.9	291.5
Pennsylvania	742.6	16.5	571.9	129.4	340.0	339.8	230.3
Texas	310.2	0.0	80.5	48.9	133.7	1,084.5	108.0
Wisconsin	507.4	0.0	50.0	26.9	37.8	75.3	91.0
Total Private	653.0	6.3	504.9	97.5	283.3	445.0	201.1
U.S. Public & Private							
California	290.9	140.0	574.3	78.2	237.9	142.9	214.8
Florida	222.5	119.6	204.7	233.4	134.7	24.1	146.4
Illinois	286.3	77.6	243.5	102.4	142.0	153.4	136.4
Indiana	250.1	72.3	154.1	27.6	111.9	76.9	110.5
Michigan	265.2	118.5	278.4	54.1	167.2	49.4	157.4
Minnesota	209.5	164.6	361.1	78.5	337.0	58.4	200.0
New York	511.6	49.6	301.5	102.0	175.2	242.0	167.1
Ohio	219.5	72.3	110.0	64.1	78.7	58.8	98.9
Pennsylvania	472.9	61.0	347.1	108.1	214.4	190.1	174.2
Texas	138.7	83.7	105.8	56.5	105.2	177.6	98.7
Wisconsin	225.5	96.1	286.9	14.6	129.9	40.1	134.1
Total Public & Private	290.2	92.1	280.0	84.8	160.1	127.5	149.3
Ontario							
Carleton	95.0	73.0	66.5	23.0	32.5	30.3	69.0
Guelph	87.5	111.0	118.8	522.0	81.1	80.0	119.0
McMaster	87.0	105.5	153.8	208.5	287.5	178.5	129.5
Ottawa	93.8	117.1	101.3	110.2	112.1	51.2	108.9
Queen's	85.0	107.0	146.8	95.7	126.8	178.5	111.5
Toronto	113.1	117.0	134.2	65.0	133.1	229.9	121.7
Waterloo	86.7	89.4	99.9	71.0	83.5	47.3	87.4
Western	99.2	92.1	87.9	46.9	90.9	24.3	88.7
Windsor	105.0	86.5	34.7	25.4	8.7	26.5	73.0
York	116.8	84.9	32.8	20.5	25.0	22.4	74.9
Total Ontario	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 3

EDUCATIONAL AND GENERAL REVENUE PER FULL-TIME HEADCOUNT
1987-88 ($PPP)

Institution Name	Tuition & Fees Per FT Student	State & Local Appropriations Per FT Student	Federal Grants & Contracts Per FT Student	State Grants & Contracts Per FT Student	Private Gifts & Contracts Per FT Student	Endowment Income Per FT Student	Total Per FT Student
U Toronto	2,329	9,042	1,838	305	1,517	1,069	16,101
Public							
U California - Los Angeles	3,375	15,065	6,106	139	2,562	0	27,250
U Illinois - Urbana	2,720	8,517	4,548	636	1,815	79	18,318
U Washington - Seattle	4,689	8,959	9,396	345	2,101	229	25,720
U Wisconsin - Madison	3,919	9,194	5,933	70	221	221	19,561
U Minnesota - Minneapolis	4,316	12,716	4,946	368	3,842	272	26,462
Ohio State U - Columbus	3,934	7,614	2,090	413	1,611	258	15,922
U Michigan - Ann Arbor	7,659	8,879	7,134	143	2,864	539	27,220
U.S. Institutions Average	4,302	10,075	5,488	302	2,079	225	22,473

Table 4

EDUCATIONAL AND GENERAL REVENUE PER FULL-TIME HEADCOUNT
1987-88 ($PPP)

Institution Name	Tuition & Fees Per FT Student	State & Local Appropriations Per FT Student	Federal Grants & Contracts Per FT Student	State Grants & Contracts Per FT Student	Private Gifts & Contracts Per FT Student	Endowment Income Per FT Student	Total Per FT Student
Queen's	1,751	8,269	2,011	449	1,445	830	14,755
Public							
Univ of California @ Davis	2,607	17,122	3,648	1,188	1,428	0	25,993
Univ of California @ Irvine	2,933	12,775	4,246	344	1,411	0	21,709
Clemson U (S. Carolina)	3,944	10,144	1,053	122	1,405	53	16,721
U Connecticut	3,944	9,454	1,577	303	628	33	15,939
U New Hampshire	6,211	4,176	2,881	238	608	200	14,315
U Rhode Island	4,802	8,211	3,592	261	440	0	17,307
U Utah	2,841	9,085	4,921	268	1,130	408	18,653
Washington State U	2,182	9,580	2,026	619	1,253	84	15,743
U Virginia	5,014	8,630	4,476	259	2,302	1,030	21,712
U.S. Institutions Average	3,286	12,813	2,741	566	1,209	19	20,632
Private							
Cornell U - Endowed Colleges	11,661	342	6,004	279	3,125	2,454	23,866
University of Miami	14,553	1,238	6,891	1,981	3,804	783	29,250
Northwestern University	19,782	0	7,170	752	3,507	3,573	34,785
Princeton	14,895	0	10,089	496	7,932	15,503	48,916
Stanford	16,392	0	40,936	0	13,732	6,963	78,023
Yale	13,970	0	17,999	960	6,716	7,531	47,176
U.S. Institutions Average	14,890	292	14,221	712	6,014	5,085	41,215

Table 5

E & G EXPENDITURES PER FULL TIME ENROLMENT
RESEARCH DOCTORAL LEVEL UNIVERSITIES
1987-88 ($PPP)

	Instruction	Research	Academic Support	Student Services	Administrative Support	Physical Plant	Total
U. S. Public							
California	9,890	6,185	3,293	1,491	1,802	1,745	24,406
Florida	6,997	4,665	1,689	1,085	2,437	1,342	18,213
Illinois	5,750	2,793	1,720	596	994	1,531	13,384
Indiana	6,167	2,528	1,342	449	1,253	1,495	13,234
Michigan	8,125	4,267	1,902	931	1,527	1,678	18,431
Minnesota	10,132	6,585	2,935	1,081	2,153	2,369	25,256
New York	8,322	2,653	1,471	673	1,647	2,184	16,950
Ohio	6,449	1,285	1,370	619	1,036	1,038	11,798
Pennsylvania	7,517	3,622	2,084	799	2,054	1,629	17,706
Texas	5,522	2,669	1,032	354	2,091	1,377	13,045
Wisconsin	6,501	6,194	1,014	444	907	1,574	16,634
Total Public	7,328	3,744	1,868	811	1,556	1,532	16,838
U. S. Private							
California	15,028	12,876	4,564	1,495	3,919	3,215	41,096
Florida	8,818	2,964	1,460	916	1,313	1,223	16,694
Illinois	16,627	5,969	1,926	1,102	3,735	2,780	32,138
Indiana	7,316	2,168	1,338	970	2,328	1,519	15,640
Michigan	5,624	177	2,001	1,156	2,373	946	12,277
New York	9,255	4,278	1,653	1,184	2,968	2,230	21,568
Ohio	11,356	10,890	3,779	913	2,814	2,401	32,153
Pennsylvania	11,049	7,696	3,008	1,093	3,108	2.589	28,544
Texas	6,237	1,103	1,058	763	1,686	1,443	12,290
Wisconsin	5,700	301	1,927	854	1,675	1,147	11,602
Total Private	10,756	5,819	2,293	1,138	2,930	2,292	25,228
U.S. Public & Private							
California	11,064	7,714	3,584	1,492	2,286	2,081	28,220
Florida	7,479	4,214	1,628	1,040	2,139	1,310	17,811
Illinois	8,210	3,511	1,767	710	1,614	1,814	17,627
Indiana	6,330	2,477	1,341	523	1,406	1,498	13,576
Michigan	8,063	4,165	1,905	937	1,548	1,660	18,277
Minnesota	10,132	6,585	2,935	1,081	2,153	2,369	25,256
New York	9,036	3,896	1,610	1,064	2,657	2,219	20,481
Ohio	6,651	1,681	1,470	631	1,109	1,094	12,637
Pennsylvania	8,777	5,075	2,414	904	2,430	1,972	21,572
Texas	5,657	2,372	1,037	431	2,015	1,390	12,902
Wisconsin	6,391	5,384	1,139	500	1,013	1,516	15,943
Total Public & Private	8,171	4,254	1,972	891	1,894	1,719	18,901
Ontario							
Carleton	5,031	1,162	807	143	758	982	8,883
Guelph	6,958	4,453	940	346	1,158	1,327	15,182
McMaster	7,888	5,550	1,002	206	1,075	1,333	17,054
Ottawa	7,625	2,555	1,060	229	963	1,444	13,876
Queen's	7,410	3,469	1,249	345	896	1,203	14,572
Toronto	7,843	3,143	1,099	212	797	1,584	14,678
Waterloo	5,655	2,231	785	356	858	1,153	11,038
Western	6,520	2,177	907	215	755	900	11,474
Windsor	5,779	716	1,020	309	745	1,208	9,777
York	6,130	697	781	221	991	1,092	9,912
Total Ontario	6,803	2,574	966	247	882	1,249	12,721

Table 6

INDEX OF E & G EXPENDITURES PER FULL TIME ENROLMENT
RESEARCH DOCTORAL LEVEL UNIVERSITIES
1987-88 (Ont. = 100)

	Instruction	Research	Academic Support	Student Services	Administrative Support	Physical Plant	Total
U. S. Public							
California	145.4	240.3	340.9	603.5	204.3	139.7	191.9
Florida	102.8	181.2	174.8	439.3	276.3	107.4	143.2
Illinois	84.5	108.5	178.1	241.2	112.7	122.6	105.2
Indiana	90.7	98.2	138.9	181.8	142.0	119.7	104.0
Michigan	119.4	165.8	196.9	377.0	173.1	134.3	144.9
Minnesota	148.9	255.8	303.8	437.5	244.1	189.7	198.5
New York	122.3	103.1	152.3	272.4	186.7	174.8	133.2
Ohio	94.8	49.9	141.9	250.7	117.4	83.1	92.7
Pennsylvania	110.5	140.7	215.7	323.5	232.9	130.5	139.2
Texas	81.2	103.7	106.8	143.1	237.1	110.3	102.5
Wisconsin	95.6	240.6	105.0	179.7	102.8	126.0	130.8
Total	107.7	145.5	193.3	328.2	176.4	122.6	132.4
U. S. Private							
California	220.9	500.2	472.5	605.4	444.3	257.4	323.1
Florida	129.6	115.2	151.1	370.8	148.9	97.9	131.2
Illinois	244.4	231.9	199.3	446.3	423.4	222.6	252.6
Indiana	107.5	84.2	138.5	392.7	264.0	121.6	122.9
Michigan	82.7	6.9	207.2	468.1	269.0	75.8	96.5
New York	136.0	166.2	171.1	479.3	336.5	178.5	169.5
Ohio	166.9	423.1	391.2	369.6	319.1	192.2	252.8
Pennsylvania	162.4	299.0	311.4	442.6	352.4	207.3	224.4
Texas	91.7	42.8	109.6	308.8	191.2	115.6	96.6
Wisconsin	83.8	11.7	199.4	345.6	189.9	91.8	91.2
Total	158.1	226.1	237.4	460.6	332.2	183.5	198.3
U.S. Public & Private							
California	162.6	299.7	371.0	603.9	259.2	166.6	221.8
Florida	109.9	163.7	168.5	421.2	242.5	104.9	140.0
Illinois	120.7	136.4	182.9	287.6	183.0	145.2	138.6
Indiana	93.1	96.2	138.8	211.8	159.4	120.0	106.7
Michigan	118.5	161.8	197.2	379.3	175.5	132.9	143.7
Minnesota	148.9	255.8	303.8	437.5	244.1	189.7	198.5
New York	132.8	151.4	166.7	430.6	301.2	177.7	161.0
Ohio	97.8	65.3	152.1	255.6	125.7	87.6	99.3
Pennsylvania	129.0	197.2	249.9	366.0	275.5	157.9	169.6
Texas	83.2	92.2	107.4	174.5	228.4	111.3	101.4
Wisconsin	93.9	209.2	117.9	202.5	114.8	121.3	125.3
Total Public & Private	120.1	165.3	204.2	360.7	214.7	137.6	148.6
Ontario							
Carleton	74.0	45.1	83.5	57.9	85.9	78.6	69.8
Guelph	102.3	173.0	97.3	140.1	131.3	106.2	119.3
McMaster	115.9	215.6	103.7	83.4	121.9	106.7	134.1
Ottawa	112.1	99.3	109.7	92.7	109.2	115.6	109.1
Queen's	108.9	134.8	129.3	139.7	101.6	96.3	114.6
Toronto	115.3	122.1	113.8	85.8	90.4	126.8	115.4
Waterloo	83.1	86.7	81.3	144.1	97.3	92.3	86.8
Western	95.8	84.6	93.9	87.0	85.6	72.1	90.2
Windsor	84.9	27.8	105.6	125.1	84.5	96.7	76.9
York	90.1	27.1	80.8	89.5	112.4	87.4	77.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 7

Variance Between U.S. and Ontario Universities
E. & G. Expenditures Per Full-Time Enrolment
Research Doctoral Level Universities
(1987-88 $PPP Greater (- Lesser) Than Ontario Universities)

	Instruction	Research	Academic Support	Student Services	Administrative Support	Physical Plant	Total
U.S. Public							
E&G Expenditures	525	1170	902	564	674	283	4117
Salaries and Wages	-242	541	492	310	393	95	1587
Percentage of Variance in Salaries and Wages	0	46.2	54.5	55	58.3	33.6	38.5
Percentage of E&G Expenditures in Salaries and Wages	72.5	54.4	53.4	59.8	61.9	40.4	61.9
U.S. Private							
E&G Expenditures	3953	3245	1327	891	2048	1043	12507
Salaries and Wages	1220	1048	658	406	1041	216	4589
Percentage of Variance in Salaries and Wages	30.9	32.3	49.6	45.5	50.8	20.7	36.7
Percentage of E&G Expenditures in Salaries and Wages	63	43.8	50.8	51.1	55	32.3	53.2
U.S. Public & Private							
E&G Expenditures	1368	1680	1006	644	1012	470	6180
Salaries and Wages	127	669	534	334	557	125	2346
Percentage of Variance in Salaries and Wages	9.3	39.8	53.1	50.3	55	26.6	38
Percentage of E&G Expenditures in Salaries and Wages	69.6	50.9	52.7	57.1	59.5	37.8	59.2
Ontario							
Percentage of E&G Expenditures in Salaries and Wages	81.7	58.2	52.4	70.9	64.6	41.9	69.4

Data Sources

The American IPEDS financial information, which is used in this study, is restricted to what is termed "educational and general" revenues and expenditures. This category includes current fund expenditures for instruction, research, public service, academic support, student services, institutional support, operation and maintenance of the physical plant, scholarships and fellowships, and transfers. The educational and general category excludes current fund expenditures for auxiliary enterprises (such as residences, food services, bookstores, and intercollegiate athletics), hospitals, and independent operations generally associated with major, federally-funded research and development centres. The educational and general category also excludes loan funds, non-expendable endowment funds, and plant or capital funds.

The financial information published annually for Ontario universities in a multi-dimensional matrix format provides a detailed picture by fund, function, source of revenue, and object of expense. The funds specified are: operating, non-credit, ancillary enterprises, sponsored research, trust and endowment, capital, and non-expendable trust and endowment. Within the operating fund, the functions specified are: instruction and research, library, central computing, student services, administration, physical plant, and other expenses. Both funds and functions are reported by objects of expense, including salaries and wages, employee benefits, library acquisitions, equipment and furniture, operational supplies and expenses, utilities, renovations and alterations, externally contracted services, scholarships and bursaries, and various miscellaneous expenses. Sources of revenue include government grants and contracts - federal, provincial and municipal - tuition and fees, borrowings, donations, non-government grants and contracts, sales of services and products, investment income, and miscellaneous income.

To be able to generate realistic comparisons between financial information from Ontario and similar information from the United States, some categories within the educational and general category must be eliminated. For example, scholarship and fellowship expenditures are eliminated because of reporting

inconsistencies between the two countries. As well, public service expenditures are eliminated from the U.S. data because they include activities unrelated to the main activities of a university such as soil testing, agricultural extension services, and public broadcasting.

On the revenue side, sales and services of educational activities and other sources of revenue are eliminated because of different accounting practices. In Ontario, the net reporting approach is used to better reflect the core operations of instruction and research at the university. This eliminates the gross revenues and expenditures of peripheral activities.

The following revenue sources, as collected by IPEDS, can be utilized:

Tuition and fees (both credit and non-credit)
State government appropriations
Federal government grants and contracts (excluding Pell grants)
State government grants and contracts
Private gifts, grants and contracts
Endowment income

The following expenditure categories can also be employed:

Instruction (both credit and non-credit)
Research (sponsored, i.e. funded, research only)
Academic support (including library expenditures)
Student services
Institutional support
Operation and maintenance of plant.

In addition, it is possible to analyze separately the cost of salaries and wages within each of these expendable categories.

Because the Canadian data are considerably more detailed than the American, the Canadian information can be adapted to the revenue and expenditure categories within IPEDS.